



- PUBLIC
- INDEPENDENT

**NEW PROGRAM PROPOSAL FOR ROUTINE REVIEW**

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*When finished, please save and email to: [he.academicprogramactions@dhe.mo.gov](mailto:he.academicprogramactions@dhe.mo.gov)*

**Sponsoring Institution:**

**Program Title:** Computer Science

**Degree/Certificate:**

**If other, please list:**

**Options:**

**Delivery Site:** Add online

**CIP Classification:**

**Implementation Date:** 8/1/2020

**Is this a new off-site location?**  Yes  No

**If yes, is the new location within your institution's current CBHE-approved service region?**

*\*If no, public institutions should consult the comprehensive review process*

**Is this a collaborative program?**  Yes  No

*\*If yes, please complete the collaborative programs form on last page.*

**CERTIFICATIONS**

- The program is within the institution's CBHE approved mission. *(public only)*
- The program will be offered within the institution's CBHE approved service region. *(public only)*
- The program builds upon existing programs and faculty expertise
- The program does not unnecessarily duplicate an existing program in the geographically-applicable area.
- The program can be launched with minimal expense and falls within the institution's current operating budget. *(public only)*

**AUTHORIZATION**

Name/Title of Institutional Officer	Signature	Date

## **PROGRAM CHARACTERISTICS AND PERFORMANCE GOALS**

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Although all of the following guidelines may not be applicable to the proposed program, please carefully consider the elements in each area and respond as completely as possible in the format below.

Quantification of performance goals should be included wherever possible.

### **1. Student Preparation**

- Any special admissions procedures or student qualifications required for this program which exceed regular university admissions, standards, e.g., ACT score, completion of core curriculum, portfolio, personal interview, etc. Please note if no special preparation will be required. Standard University admission requirements apply.
- Characteristics of a specific population to be served, if applicable.  
No special characteristics

### **2. Faculty Characteristics**

- Any special requirements (degree status, training, etc.) for assignment of teaching for this degree/certificate.  
A terminal degree in a field relevant to computing such as data science, cybersecurity, computer science, artificial intelligence, data analytics, or mathematics, statistics. Prior teaching experience and relevant computer science. The College of Arts and Science and the School of Business have strong expertise in the areas of cybersecurity, data science, computer science, software development, statistics, cybersecurity, and user experience. Candidates with Master degrees with extensive professional and/or teaching experience will be considered.
- Estimated percentage of credit hours that will be assigned to full time faculty. Please use the term "full time faculty" (and not FTE) in your descriptions here.  
It is estimated that 30% of the credit hours will be instructed by full time faculty. This percentage will be revised based on student enrollment and the needs of the university.
- Expectations for professional activities, special student contact, teaching/learning innovation.  
Faculty are expected to stay current on computer science industry trend and innovations to ensure content is aligned with emerging concepts that will enhance student knowledge and practice within the field. Participate in local/national professional orgs, student advising, and ongoing pedagogy training.

### **3. Enrollment Projections**

- Student FTE majoring in program by the end of five years.  
At the completion of year 5, we expect to have an estimated FTE of 325 students.
- Percent of full time and part time enrollment by the end of five years.  
25% full-time; 75% part-time

### **STUDENT ENROLLMENT PROJECTIONS**

YEAR	1	2	3	4	5
Full Time	2	16	45	89	130

Part Time	8	60	135	267	390
Total	10	76	180	356	520

#### 4. Student and Program Outcomes

- Number of graduates per annum at three and five years after implementation.  
Depending on transferability of completed courses and the expected rate of completion for part-time students we expect 50 graduates at the end of year 3 and 150 students at the end of year 5.
- Special skills specific to the program.  
Students will leave the program with the skills and competencies as defined by the program outcomes and required for success within Programming, Statistical Analysis, Data Analytics, and Communication
- Proportion of students who will achieve licensing, certification, or registration.  
Not applicable.
- Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests; percent of students achieving minimal cut-scores on criterion-referenced tests. Include expected results on assessments of general education and on exit assessments in a particular discipline as well as the name of any nationally recognized assessments used.  
Not applicable
- Placement rates in related fields, in other fields, unemployed.  
85% in related fields; 10% in other fields; 5% unemployed.
- Transfer rates, continuous study.  
75% will remain in continuous study; 25% will transfer from/leave the program.

#### 5. Program Accreditation

- Institutional plans for accreditation, if applicable, including accrediting agency and timeline. If there are no plans to seek specialized accreditation, please provide rationale.  
All Maryville programs are regionally accredited by the Higher Learning Commission. Specialized accreditation is not necessary.

#### 6. Program Structure

- Total credits required for graduation: 128
- Residency requirements, if any:  
Last 30 hours
- General education: Total credits:  
45 credits

Courses (specific courses OR distribution area and credits)

Course Number	Credits	Course Title
<b>Skills/Processes for Literacy</b>		
ENGL 101	3.00	Writing I: The Writing Process
ENGL 104	3.00	Writing II: Research and Argumentative Essays
SPCH 110	3.00	Oral Communication
<b>Humanities</b>		
Fine Arts (choose 1 course)	3.00	Fine Arts Elective
English Literature/ Foreign Language (choose 1 course)	3.00	Engl Lit/Foreign Lang
Philosophy (choose 1 course)	3.00	Philosophy Elective
Humanities (choose 2 courses)	6.00	Humanities Elective
<b>Social Sciences (choose 3 course from 2 areas)</b>		
Social Science Elective – choose from ECON, PSCI, PSYC, SOC		
<b>Natural Sciences &amp; Quantitative Reasoning</b>		
Science	3.00	Any Science Elective
MATH 102	3.00	Everyday Data
MATH 125	3.00	College Algebra & Trigonometry
MATH 311	3.00	Discrete Mathematics

D. Major requirements: Total credits: 60

Course Number	Credits	Course Title
<b>Computing Core</b>	<b>24.00</b>	<b>All Courses Required</b>
COSC 130	3.00	Introduction to Programming
COSC 150	3.00	Introduction to JAVA Programming
COSC 151	3.00	Computer Science I
COSC 210	3.00	Operating Systems
COSC 220	3.00	Database Design
COSC 230	3.00	Project Management
COSC 310	3.00	Data Structures & Algorithms
COSC 498	3.00	Capstone Project
<b>Required 1 Track + Electives to Reach a total of 60 Credits from the Major.</b>		
<b>Data Science Concentration</b>	<b>18.00</b>	
DSCI 304	3.00	Introduction to SQL
DSCI 314	3.00	Natural Language Processing
DSCI 408	3.00	Machine Learning
DSCI 417	3.00	Big Data
DSCI 419	3.00	Deep Learning
MATH 316	3.00	Linear Algebra
DSCI	3.00	Introduction to Robotics
<b>Artificial Intelligence Concentration</b>	<b>18.00</b>	

DSCI 314	3.00	Natural Language Processing
DSCI 408	3.00	Machine Learning
DSCI 419	3.00	Deep Learning
DSCI 421	3.00	Introduction to Robotics
DSCI 423	3.00	Computer Vision
MATH 316	3.00	Linear Algebra
<b>Software Development Concentration</b>	<b>18.00</b>	
SWDV 220	3	Computer Systems and Programming Languages
SWDV 226	3	Software Development Methods and Tools
SWDV 420	3	Foundations of Web Application Development
SWDV 430	3	Object-Oriented Application and Design
SWDV 460	3.00	DevOps
SWDV 497	3	Special Topics in Advanced and Emerging Technologies
<b>CyberSecurity Concentration</b>	<b>18.00</b>	
ISYS 280	3	Critical Systems and Controls
ISYS 470	3	Ethical Hacking
ISYS 480	3	Security Information and Event Management
ISYS 484	3	Digital Forensics
ISYS 485	3	Incident Response and Malware Analysis
<b>User Experience Concentration</b>	<b>18.00</b>	
ISYS 120	3.00	Storyboarding App
ISYS 220	3.00	App Development
ADGD 265	3.00	Introduction to Digital Media
ADDM 200	2.00	Designing for Meaning
IADGD 310	3.00	Web Design I
ADDM 450	3.00	UX/UI Design
<b>Blockchain Concentration</b>	<b>18.00</b>	
COSC 140	3.00	Introduction to Blockchain
COSC 290	3.00	Blockchain Networks
COSC 310	3.00	Blockchain Cryptocurrencies
COSC 315	3.00	Ethics and Legal Aspects of Blockchain
COSC 375	3.00	Applications of Blockchain Technology
COSC 497	3.00	Special Topics in Advanced and Emerging Topics in Blockchain

E. Free elective credits: 23 credits

*(sum of C, D, and E should equal A)*

F. Requirements for thesis, internship or other capstone experience:

Through completion of the 3-credit hour capstone experience, students are required to identify a problem, design and implement a computing solution to solve the problem, and present their findings.

G. Any unique features such as interdepartmental cooperation:

The computer science is program is a joint effort between the College of Arts and Sciences and the Simon School of Business.

**7. Need/Demand**

Student demand

Market demand

Societal demand

I hereby certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful.

***On July 1, 2011, the Coordinating Board for Higher Education began provisionally approving all new programs with a subsequent review and consideration for full approval after five years.***

## COLLABORATIVE PROGRAMS

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- **Sponsoring Institution One:**
- **Sponsoring Institution Two:**
- **Other Collaborative Institutions:**
- **Length of Agreement:**
- **Which institution(s) will have degree-granting authority?**
- **Which institution(s) will have the authority for faculty hiring, course assignment, evaluation and reappointment decisions?**
- **What agreements exist to ensure that faculty from all participating institutions will be involved in decisions about the curriculum, admissions standards, exit requirements?**
- **Which institution(s) will be responsible for academic and student-support services, e.g., registration, advising, library, academic assistance, financial aid, etc.?**
- **What agreements exist to ensure that the academic calendars of the participating institutions have been aligned as needed?**

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